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ABSTRACT

Following a discussion of the role of classifiers (i.e., verbs of motion and location) in American Sign Language, this manual presents a six-unit program designed to teach students to produce sentences with classifiers. First, an overview is provided of the hierarchy of verbs of motion and location produced when the resources of the body are combined with specific movements. This section includes an inventory with five different groupings of classifiers used by signers to refer to an object: size and space specifiers, which refer to the physical characteristics of an object; abstract semantic classifiers, which classify objects belonging to certain groups of nouns (e.g., humans or vehicles); body classifiers, which are those parts of the body that are doing the action or serving as a real world reference frame; instrument classifiers, which are those parts of the body that manipulate the referent object; and primitive classifiers, which refer to an area or cluster of things. Next, the six instructional units are presented, covering: (1) tracing and basic shapes, in which students are introduced to the classifiers for each basic shape; (2) combination, deletion, and substitution; (3) basic movement roots, including the stative, contact, and active forms; (4) the real world reference frame; (5) the abstract reference frame and semantic classifiers; and (6) the shift between reference frame and semantic classifiers. An inventory of classifiers is appended. (HB)

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AMERICAN SIGN LANGUAGE

COMMUNITY COLLEGE NETWORK

CLASSIFIERS IN ASL:

A MANUAL FOR INSTRUCTORS

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Prepared by staff at Vista College
Berkeley, California
1983

JC 840 527

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The following individuals, most of whom are associated with Vista College, deserve special mention:

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And last, but not least, to Ted Supalla, of the University of Illinois, for the generous sharing of his research, the source of which enabled us to proceed with the project on our own.

Ken Mikos
Project Director
August, 1983

Of all the syntactical components in American Sign Language, classifiers probably rank as the most important. They are the heart of the language, utilizing the resources of a signer's body combined with movement within a three-dimensional frame to produce a rich visual imagery. In spite of their physical similarity to the shapes and movements they represent in the real world, classifiers have been found to contain discrete units that follow certain linguistic principles.[1]

Despite the fact that classifiers play an important part in ASL, they have long been ignored and misused by researchers, educators, sign language teachers, and even by deaf people themselves, some of whom regard the motions by the hands as merely "acting out," "mime," or "pantomime," (and therefore, non-linguistic). These views are further reinforced when such motions and handshapes are not to be found in many sign language vocabulary books and are very rarely used by deaf people in the presence of other hearing people. For some deaf people, an educationally fostered emphasis on the English language (and spoken language) as the only correct or legitimate language to learn perpetuates an attitude that sign language is an "inferior" language. These people, in turn, may deny that such linguistic features as classifiers do exist. Instead, they recognize and acknowledge mainly citation-form signs which have English equivalents found in sign language vocabulary books.

Research dealing with the role and function of classifiers is relatively recent. It was not until 1978 that researchers identified classifiers in ASL. In fact, these researchers, Ted Supalla and Elissa Newport, of the University of Illinois, Champaign, Illinois, are probably the only researchers to date

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[1]Supalla, Ted. "Morphology of Verbs of Motion and Location in American Sign Language," Proceedings of the Second National Symposium on Sign Language Research and Teaching. (October 1978) p. 28.

who have studied the morphological properties of classifiers extensively. Their published works and findings form the basis for Vista College's set of instructional units to be used in teaching the concepts of classifiers.

Dennis Cokely and Charlotte Baker of Gallaudet College, Washington, D.C. have attempted to describe in layman's terms the function of classifiers in their invaluable manual for instructors of ASL.[2] However, recent research on the linguistic and semantic role of classifiers have made it necessary to update the information contained in their book.

OVERVIEW OF HIERARCHY OF VERBS OF MOTION AND LOCATION

At a workshop held in February 1983 for sign language teachers from the Northern California area, Ted Supalla elaborated on his hierarchy of verbs of motion and location (see figure 1). Since classifiers function as verbs in a sentence, they have been called verbs of motion and location. According to the hierarchy, these verbs are produced when the resources of the body are combined with specific movements. The resources of the body include articulators, which may be either the signer's body or hands/arms, and the space in front of the signer's body. The articulators may have either the active aspect or the passive (or base) aspect. When hand articulators are used, they must assume the correct handshapes as determined by the inventory of classifiers for a noun (this will be discussed later). The other resource the signer uses in his/her discourse is to establish a reference frame, which may be either real world or abstract. A real world reference frame usually refers to the world as seen by the signer - objects are either located or displaced according to his/her perspective. Generally, the ground is at the signer's feet and

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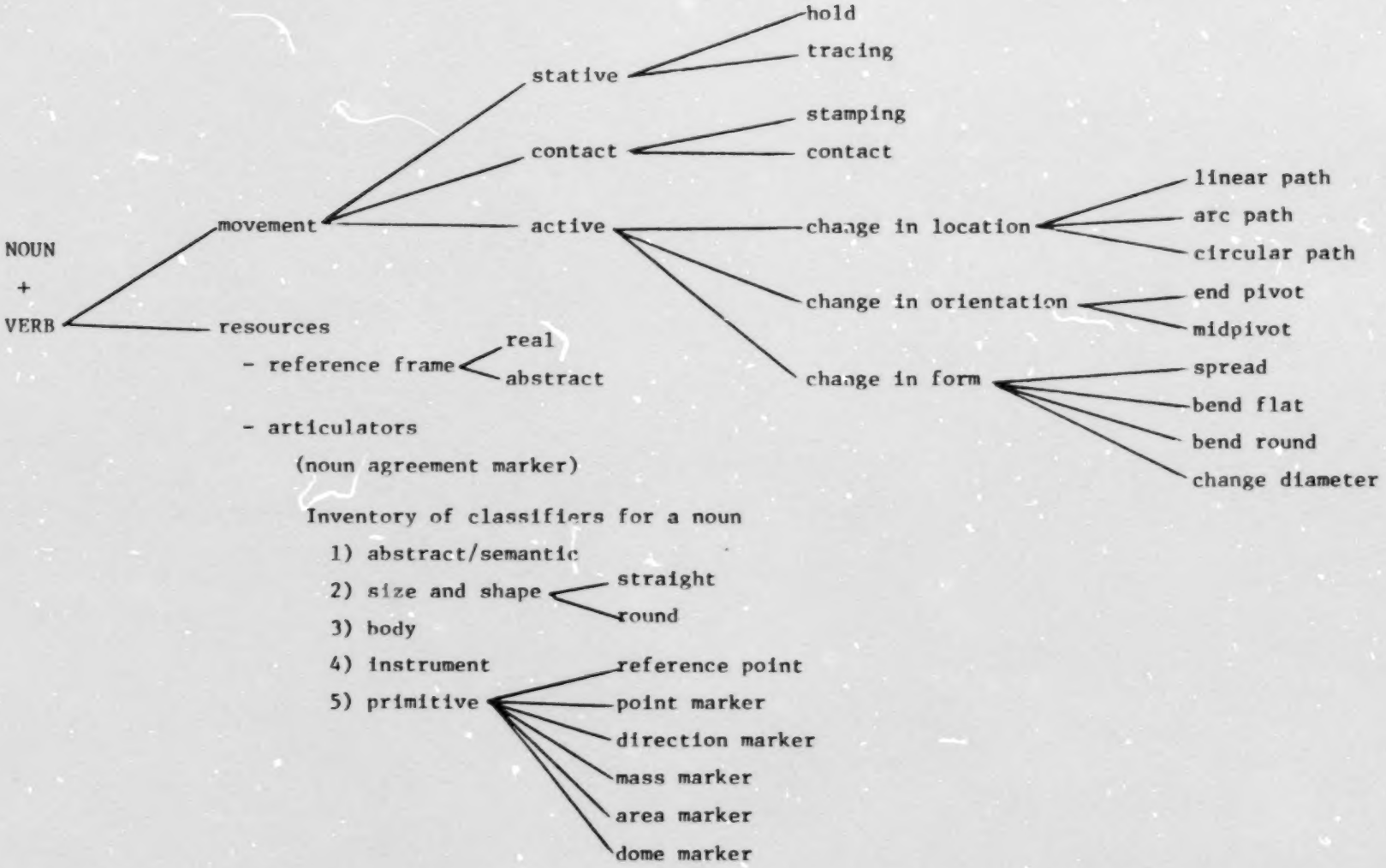
[2] Cokely, Dennis and Baker, Charlotte. American Sign Language: a Teacher's Resource Text, 1980.

FIGURE 1. Hierarchy of Verbs of Motion and Location



everything located or displaced in the signer's space is related to the ground at the signer's feet. On the other hand, in an abstract reference frame, the ground is usually established at the front of the signer's body, usually around the chest, and the location or spatial relations of objects in this area may not necessarily bear any relation to the real world. Emphasis is placed on the location or motion of the central object or on how the central object acts upon the secondary object. It is this writer's observation that abstract semantic classifiers are used extensively within the abstract reference frame, probably because distance cannot be represented well in real world reference frame and also because past events are usually the setting for abstract reference frames.

The articulators as discussed briefly above can be either the hand markers or the body markers. Some hand markers require the use of just one hand, and others require the use of both hands to represent a single noun. In some combinations of two or more nouns, one hand of a two-handed marker may need to be deleted to accommodate the marker for the other noun. Body markers may be the signer's own body, or parts of his/her body, that can be used to represent animate objects, e.g., a bird or another human being. Whenever a body marker is used as a verb, the signer can only represent one animate object. If s/he wishes to refer to another animate object, s/he must shift his/her body to a different position to indicate that more than one animate object is being discussed.[3] Ted Supalla also mentions that when a body marker is used as an active articulator, it is required of the signer to also use his/her hand to represent the noun, e.g., shifting eyes

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[3]Supalla, Ted. Structure and Acquisition of Verbs of Motion and Location in American Sign Language. Unpublished doctoral dissertation, University of California, San Diego, 1982.

to the left or licking ice cream from a plate.

There is an inventory of classifiers that a signer uses to talk about an object. How a signer selects certain classifier signs is determined, to a large extent, by the signer's focus on certain aspects of the noun. For instance, if the noun itself is an agent, the signer chooses a classifier sign that represents that parameter of the noun. A door that opens by itself would be represented by the flat B handshape. However, if a person (agent) opens the door, the signer would use the instrument classifier sign (open C) to show that the action has been completed by an agent.

Within the inventory, there are five different groupings: (1) size and shape specifiers, (2) abstract semantic, (3) body, (4) instrument, and (5) primitive. The first group of classifiers represent the physical characteristics of an object and they are popularly referred to as SASSes (size and shape specifiers). Signs in the abstract semantic category classify those objects which belong to certain groups of nouns, i.e., humans or vehicles. Instrument classifiers are those parts of the body, usually the hands, that manipulate the referent object. Body classifiers are those parts of the body that are doing the action (verbs) or the whole body that becomes the base in a real world reference frame. Primitive classifiers consist of noun markers which do not represent the physical characteristics of an object, but are used to refer to an area, or a cluster of things, to give directions, or to establish a reference point in the signing space. Handshapes in the primitive category are not marked, but are simple and universal.

The above five groups comprise a signer's inventory of classifiers for a noun. The signer selects from one of these categories to represent a noun not indiscriminately, but in accordance with the signer's focus.[4] Ted Supalla

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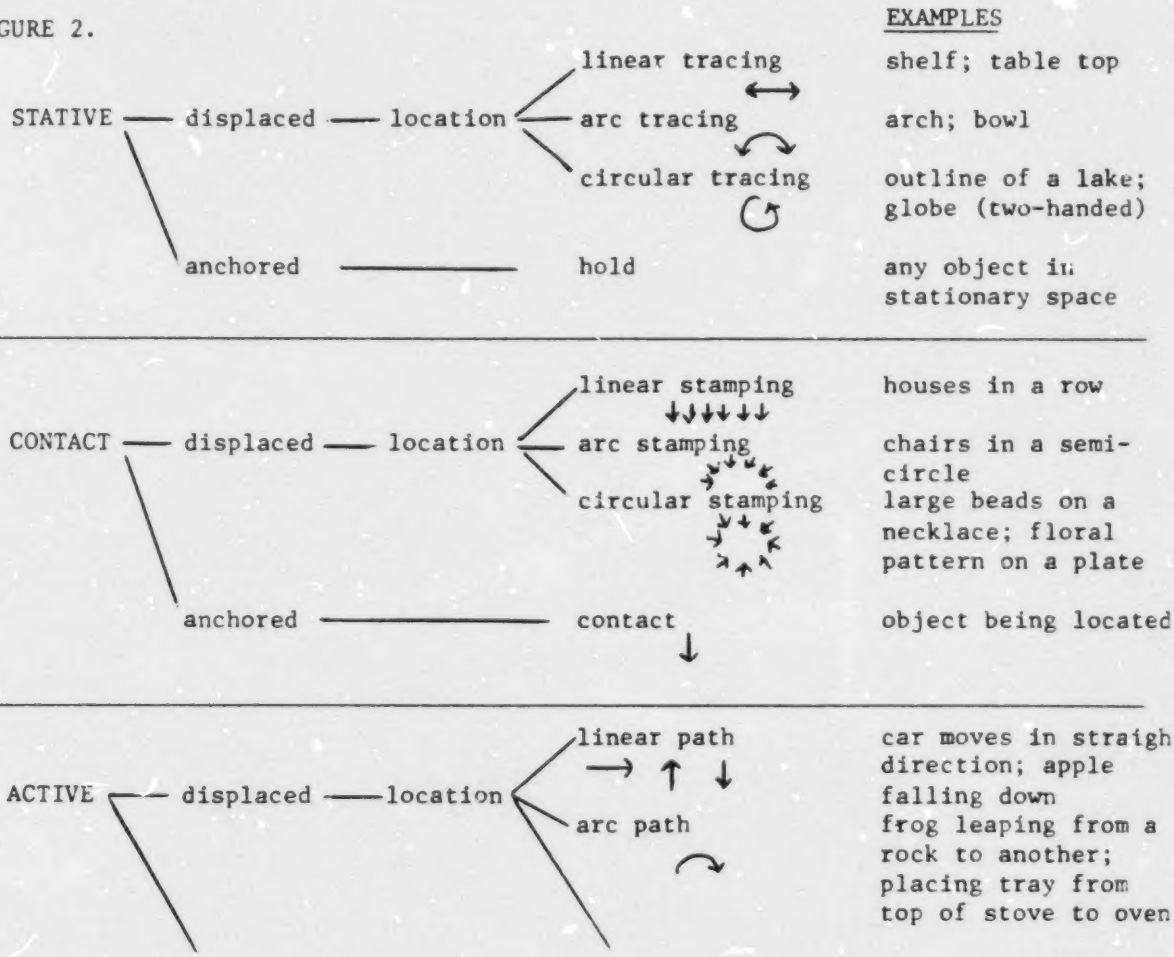
[4] Ibid, p. 33

indicates that this selection is based on several considerations. First, is the noun itself an agent (subject)? Does the noun itself do the action, or is the noun a patient (object)? Scale is another consideration in the signer's selection. Once an object is established within a reference frame, other objects that are part of the same frame must be correctly related to the first object in scale. To make all objects proportionate in scale to each other, the signer must select the appropriate classifier signs; i.e., a house can be represented by many different classifier signs. If a signer wants to show that a house is on his/her left, s/he can use the abstract semantic classifier for a house (Å) which s/he'll place on his/her left. However, if s/he wants to show that a motorcycle crashes into the house, s/he would have to change to another reference frame, and select the flat B handshape using the left hand to represent the wall of the house and then use the 3 handshape of the right hand to represent a motorcycle. Further, if the signer's body is used as a noun marker and the signer wanted to show that a house was about five miles away from the signer, s/he would use the primitive C1:1 (tip) marker to represent the house. This would conform to scale since it is relative to the signer's body.

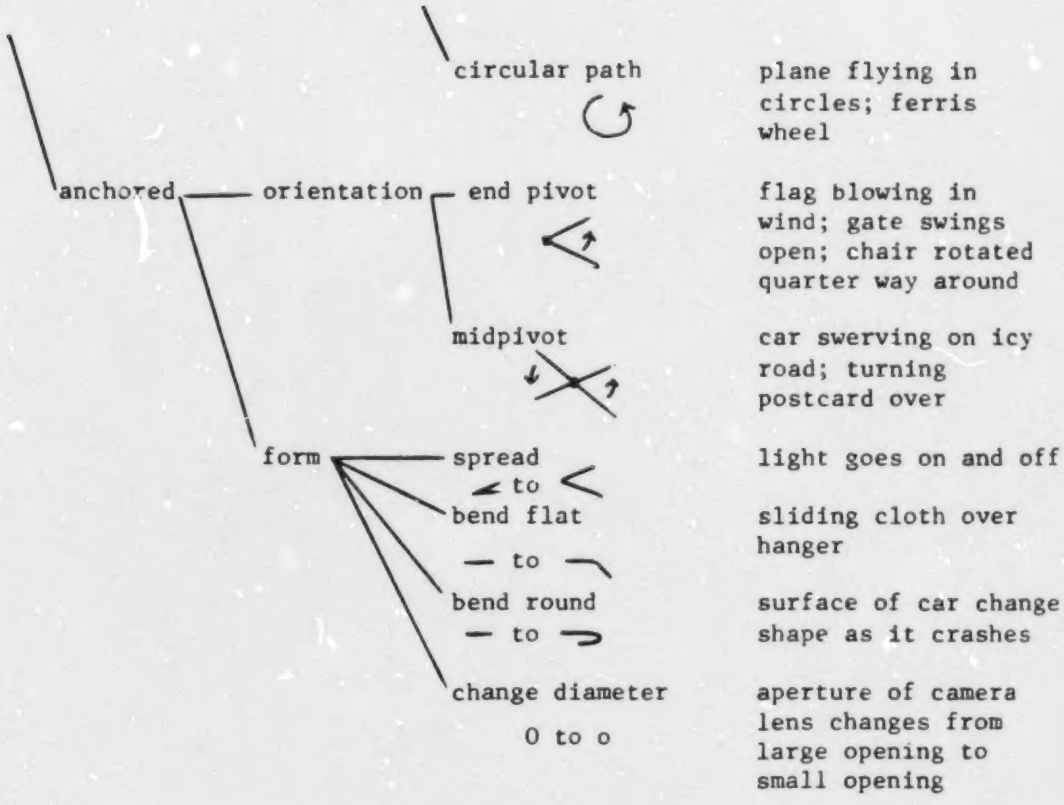
With the resources at his/her disposal, the signer must create movement with the articulators to give them meaning. Ted Supalla argues in his papers that there are a finite set of possible movement patterns and even a limited number of possible combinations of the same. There are three types of basic movement roots: (1) stative, (2) contact, and (3) active. Stative roots are used to describe objects in a stationary space, or to show the existence of an object. Contact roots are used to denote location of an object or objects and they are accompanied by a slight movement of the hand.

Active roots are used to show the motion of an object. For each root, there is a displaced and an anchored form. Displaced form refers to the movement of hands in space (and not to movement of the objects, except for active roots). Anchored form refers to hand articulators that do not move from an established point in space, though some may change only in form or orientation.[5] There are more subdivisions of the movement parameters, but the information below will suffice for the present:

FIGURE 2.



[5] Ibid, p. 12



The above movement roots can be combined simultaneously with other secondary types of movement (e.g., repetition to show plurality of objects), or manner of movement (car moving over bumpy road). The movement roots can also be combined with each other to show certain motion, e.g., a series of short arc paths along a linear path (path of a car on a rollercoaster), several contact points along a circular path (person planting seeds), and an end pivot at end of a linear path (car swerving on icy road and then slamming into freeway divider).

Size and Shape Specifiers

Supalla distinguished two basic handshapes within the size and shape specifier group. These two handshapes are the straight and the round. Straight is represented by the index finger extended outwards and round is

represented by the bent index finger pointing toward an extended thumb. These two handshapes generally refer to objects that are thin. To represent objects with more depth, the middle finger is added (extended) along with the index finger for objects that are narrow and shallow, and the other two fingers (ring and pinkie) are also extended for objects with much more depth.

At Vista College, the group of consultants working on the project spent many hours analyzing this specific category. We've discovered that many objects appear to be represented by at least two different size and shape specifiers. However, upon closer analysis, it seems that the SASSes may serve two functions. First, some SASSes are specifically used to describe objects. More or less exact dimensions are given, especially when the stative - tracing parameter is utilized. We call these descriptive classifiers. The other function of the SASSes is to locate objects (CONTACT) or to show motion (ACTIVE). These SASSes tend to be one-handed, and are called locative classifiers. To give an example, in describing a ruler, we use the two-handed G handshape in displaced form to trace the size and shape of the ruler. But, to show where a ruler has been placed, we use the one-handed H handshape. We find this to be true for many objects. (See Appendix A). Further discussion on SASSes and their application in sentence usage will be found in the section on Instructional Units. (Units 1 and 2)

Abstract Semantic Classifiers

This category of classifiers refers to handshapes that do not actually represent the size and shape of objects but refer to handshapes which are single morphemes. Humans are represented by the V and 1 handshape. Animals are usually represented by the V handshape. Trees are represented by the open 5 handshape and forearm together, and so on. Appendix A lists about

nine different handshapes for the semantic classifiers. Since they classify groups of things, there are certain linguistic principles that apply to semantic classifiers. Often, they may not be used in conjunction with SASSes. For example, when a signer wishes to use SASSes to describe a person, s/he cannot use the semantic classifier for a human as a base articulator. Nor can s/he use SASSes with the classifier sign for vehicles. Semantic classifiers are used to show location of objects in relation to one another, or in relation to the ground; or to show motion within a reference frame. In certain instances, the hands or fingers of a semantic classifier sign cannot touch the hands or fingers of another semantic classifier. For example, a signer cannot use the human classifier $\ddot{V}$ (sitting position) to show specifically where passengers are seated in or on a car if the semantic classifier for vehicle is used as a base articulator. S/he must resort to SASSes and use the flat B handshape to represent the side of a car, and then will s/he be allowed to use the human semantic classifier to show where passengers are seated.

Instrument

This group of classifiers refer to the agent manipulating a referent object. It may be the hands or mouth of a person (but not limited to these parts of the body) that are the agents. Handshapes may closely resemble the action of the agent, but they do not necessarily resemble the size and shape of the objects (or parts of the objects) being manipulated. For instance, a signer can use the closed S handshape to indicate a person lifting weights. This handshpe does not show the specific size and shape of the pole. (This is one example where American Sign Language differs from pantomime or mime, in which hand movements and forms more accurately reflect real world dimensions).

Instrument classifiers are always utilized in real world reference frames and never in abstract reference frames since the use of the signer's body as an articulator establishes a real world relationship with objects in the signing space. (See Appendix A for list of instrument classifiers).

Body

Here, as with the instrument classifiers, whenever a signer's body is used as an articulator, the real world reference frame is utilized. A signer's body may be used as a base articulator to describe clothing, to describe physical appearance, to describe facial expressions, and to show how the central object interacts with the body. It is assumed during a signed discourse that the body represents a normal-sized human being; therefore, objects being described should be in direct proportion to the body in scale. However, should the signer mean to describe, for example, the Green Giant or the shrinking woman, the signer must first make this clear to the addressee. The addressee will then realize that whatever classifier signs the signer uses will be in proportion to the size of the human body within this reference frame.

When the signer's body, particularly the head, or parts of the head, is used as an active articulator, that is, as a verb, the hand must also be used as an active articulator in agreement with the body.[6] To show a dog licking a plate, for example, the signer uses both his/her tongue and his/her hand (H handshape) simultaneously to represent the action.

As mentioned earlier in this paper, whenever a signer uses a body marker as a verb, the signer is referring to one animate object. If s/he wishes to refer to another animate object during a signed discourse, s/he must shift his/her body to represent the other objects.

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[6] Ibid, p. 32

Primitive

This group of classifiers has very little to do with size and shape and is composed more or less of universal gestures used by hearing as well as Deaf people. One primitive classifier, the tip of the index finger, is used to establish a reference point in a neutral space in front of the signer's body. This is commonly used in giving the relative distance between two points in space, e.g., the distance between San Francisco and Sacramento. The point marker (the tip of the index finger in motion) is used to trace the movement or path of an object, for example, the route of a car. The direction marker employs either the tip of the index finger or the whole hand (palm orientation to the side) in giving map or route directions. The mass marker is the B handshape used to represent a large mass or an area, such as a surface (wall, floor, ground). Again, size and shape is not indicated here, just the perceived mass. The area marker, which is the 5 handshape, is used to indicate a specific area. The dome marker (bent 5 handshape) is used to show such things as a cluster or pile in a specific area, an edifice, or a hill.

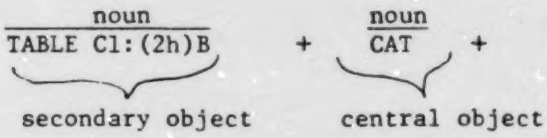
Syntax

To use a classifier sign in a sentence, the basic pattern used (as indicated in the hierarchy) is that of a noun followed by a verb. A noun must be indicated before a signer can use a classifier sign. Also, the classifier sign must be in agreement with the noun. For example, in the sentences below, the first sample is correct because the classifier within the verb predicate agrees with the noun. The last sentence is incorrect because this principle is not being applied.

		noun		verb
correct	1.	CAR	+	Cl:3 (located on left of signer's body)
		noun		verb
incorrect	2.	MAN	+	Cl:3 (located on left of signer's body)

This may seem simple to understand and follow, but sign language students make this syntactical error frequently, probably because instruction in this area is deficient or lacking.

There is another sentence pattern wherein the object/subject/verb (OSV) order is used. In the English language, the central object is usually the subject in the sentence and the secondary object is usually the direct object, as in the sentence, "The cat jumped on the table." In ASL, the order is usually the reverse -- the secondary object is established first and then the central object follows as in the ASL sentence:



Thus, the object becomes the base articulator in the sentence, although it is the secondary object in the action.[7]

In the instructional units that follow, we attempt to determine the correct sentence patterns containing morphemes which function as classifiers. In some specific areas, there seem to be certain principles that are utilized. However, they are based on our intuition as native signers and as teachers who have observed errors in sentence production. Much more research is needed in the area of syntax processing, but we feel confident that our work so far will greatly aid instructors of ASL in teaching the appropriate use of classifiers to their sign language students.

The consultants at Vista are grateful to Ted Supalla for providing us with new insights into the morphology of verbs of motion and location. We regret that there are not enough researchers and linguists who deal in this specific domain. As teachers, we could benefit greatly from further research

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[7] Ibid, pp. 4-5

into this highly complex area of language processing.

In the instructional units that follow, we have attempted to adapt this new knowledge of classifiers into an instructional approach that will successfully teach students to produce sentences with classifiers. We have developed six instructional units based on Supalla's work. The six units are as follows:

1. TRACING AND BASIC SHAPES
2. COMBINATION, DELETION AND SUBSTITUTION
3. BASIC MOVEMENT ROOTS
4. REAL WORLD REFERENCE FRAME
5. ABSTRACT REFERENCE FRAME AND SEMANTIC CLASSIFIERS
6. SHIFT BETWEEN REFERENCE FRAMES, AND RELATIVE SCALE

The intent of this grant is to develop instructional units that can be replicated in other sign language programs throughout the state of California. Materials have been developed in conjunction with the concepts taught for each unit. What follows are explanations of the language principles covered in each unit, and how we can apply these in the classroom.

UNIT ONE - TRACING AND BASIC SHAPES

In this unit, the focus is on introducing students to basic shapes and teaching them what the appropriate classifier signs are for each shape. Students should then be able to generalize their new knowledge to real life objects and select appropriate classifier signs. Many objects may be represented by classifiers used to depict general, basic shapes. However, to indicate more specifically the size and shape of an object, the student must resort to tracing.

This unit also attempts to introduce students to the use of locative classifier signs to depict the location and the motion of objects, but here

the selection of appropriate classifier signs is based on the physical characteristics of the referent object.

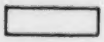
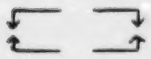
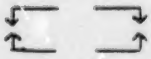
Two-dimensional Flat Objects

SHAPE	SIZE	CLASSIFIER SIGN
●	½" diameter	Cl:F (tip of index finger bent inward and touches palm of hand)
●	1½" diameter	Cl:F (tip of index finger touches thumb)
●	3" diameter	Cl:F (tip of finger doesn't touch thumb)
●	5" diameter	Cl:$\ddot{\ddot{\text{LL}}}$ (two-handed) Cl:B (used to locate)

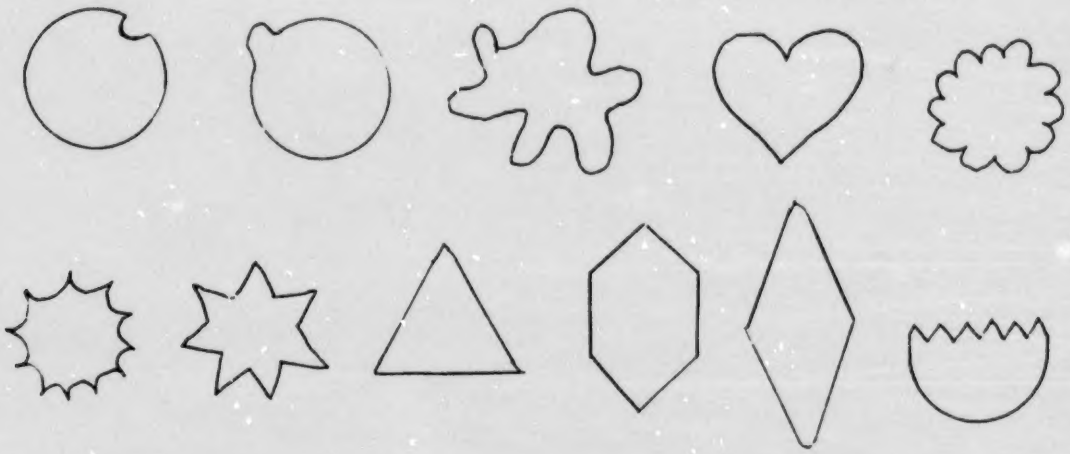
The above classifier handshapes for round objects can be used either as descriptive classifiers or as locative classifiers (with the exception of the last classifier, Cl:B, which can only be used as a locative).

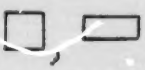
	5" base length	Cl:$\ddot{\text{L}}$ (one-handed)
	any length; approx. ½" width	Cl:1
	any length; approx. 1-2" width	Cl:H
	any length	Cl:X
	rectangular, any size	Cl:B

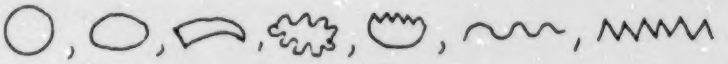
The above signs are used mainly as locative signs. We use tracing to describe more specifically the shape of objects that are not round.

SHAPE	SIZE	CLASSIFIER SIGN	TRACING
	1" width	Cl:(2h)G	
	3" all sides	Cl:(2h)G	
	10" all sides	Cl:(2h)1(tip)	

For objects that appear to be round, but have irregular outlines, the following principles seem to apply: student can use basic shapes (for round objects) to locate or to inform addressee of the general shape of the object, but if student wishes to be more specific about the shape, s/he must resort to tracing. However, before student can use tracing, s/he must establish basic shape of object first. Below are examples of unusual configurations.



For more symmetrical shapes or outlines such as  , both hands become active, that is, they move symmetrically from one point to another . Rectangular shapes can be traced with both hands using the Cl:G handshape.

For spherical shapes, elliptical shapes, and irregularly-shaped outlines such as  , the signer uses the base hand or the passive hand to establish a reference point and uses the active hand to trace from the reference point (or starting point) to the end point (either back to the reference point, or to the end of the line).

For objects with unusual shapes such as the Cl:G (two-handed) is used to trace the objects. Both hands are active for the first two illustrations shown above ("frame" and "triangle"). For the arch-like object, one hand serves as the base hand, the other as the active hand.

Three-dimensional Objects (Objects with Depth)

SHAPE	SIZE	CLASSIFIER SIGN	
		DESCRIPTIVE	LOCATIVE
	1½" diameter, 8" long	Cl:(2h)F ⟷	Cl:1
	4" diameter 8" long	Cl:(2h)C ⟷	Cl:1 or Cl:C
	3" cube	Cl:(2h) "box"	Cl:C or Cl: "dome"
	10" cube	Cl:(2h) "box"	Cl:C or Cl: "dome"
	10" circumference	Cl: spread C	Cl: spread C
	25" circumference	Cl:(2h) spread C	Cl:(2h) spread C
	8" long, 2" width, 2" depth	Cl:(2h) C ⟷	Cl:C

As with two-dimensional objects, tracing can be accomplished with the three-dimensional objects to describe their exact size and shape. The flat B handshape (instead of the index finger) is used to form the size and shape of the objects.

We have observed that whenever tracing is employed, objects must be described in life-size dimensions. If a signer wants to describe an object that is on a table about thirty feet away, s/he must create a new reference frame and describe the object as if it were within his/her signing space. For objects that are standing on surfaces or hanging on walls, the signer traces objects in a neutral space in front of the body and uses his/her eyes briefly to follow the path of his/her fingers as s/he traces the shape of the referent object. For objects lying horizontally on the ground or near the ground, signer traces on a horizontal plane in front of his/her body and likewise directs his/her gaze towards the path his/her fingers create in the signing space.

If the signer establishes the location of an object within the signing space before s/he has a chance to trace it, then the signer must trace the object at the point in space where the object has been located. If the signer has not located the object, s/he must trace the object in neutral space (after indicating the noun) before s/he can locate it in space. For example, suppose a signer wishes to talk about an oval-shaped wall mirror. S/he can use either of the following sentence structures:

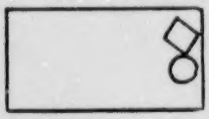
	noun		descriptive		locative classifier
1.	MIRROR	+	Cl:(2h)1 ʃ ↓ (trace in neutral space)	+	Cl:LL (put on wall on left)

or

	noun		locative classifier		descriptive
2.	MIRROR	+	Cl:LL (put on wall on left)	+	Cl:(2h) 1 ʃ ↓ (trace on left side)

Sometimes it may not be possible to describe objects that are either too huge or too small to utilize the life-size reference frame. When this occurs, the size of the object must be established first before the signer shifts reference frame and begins to describe objects comfortably within the signing space. Such huge objects may be a house, a mountain, or a tree. Examples of tiny objects are a paper clip, a pin, a ring, or an earring.

Locative Signs

When we wish to inform the addressee(s) about the relationship of one object to another in space, we use locative signs. Again, locative signs are not specific, but are general representations of the size and shape of objects. Should a signer wish to be more exact about how two objects relate to each other, then the signer may need to use tracing and/or a reference point marker (a point along a line or at the corners); e.g., If these two objects are on a surface such as a table, the signer may wish to indicate the relationship of the objects to the table. In that case, the signer may use the locative sign for the table, but s/he must also use tracing to indicate the surface area in order to be more exact about which part of the surface the objects are located on; e.g., 

Any time the signer establishes an object in a specific location and wishes to refer to it again during a signed discourse, s/he must use topicalization (raised eyebrows) to refer the previously established referent object, before s/he can relate it to the other objects.

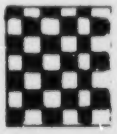
Design and Pattern

Describing designs on surfaces or patterns on materials usually requires an active articulator and a passive articulator. If the object is a piece of clothing such as a sweater or a cap, the body becomes the passive articulator

and one or two hands become the articulator doing the tracing or marking on the body. (A sock can be described using the non-dominant hand and forearm as the base articulator). If the object is a piece of material, then signer would need to trace the object in front of his/her body. The same is true for describing design on a book cover or an abstract painting. Facial markings, such as freckles or pimples, may be indicated by stamping movement on the face of the signer.[8]

Cl:4

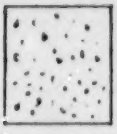
Cl:G

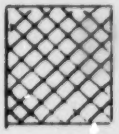

Cl:"rect"

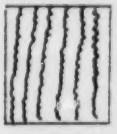
Cl:G or 1

Cl:4

Cl:F


Cl:5


Cl:4 (base)
Cl:4 (active)
(change orientation)


Cl:4wg

Cl:1

Plaid pattern is indicated by the active hand (Cl:4) changing orientation of the palm as it makes contact on the passive articulator (hand Cl:4 or body). This is a different movement than the one made for a grid or a net in that the two hands (Cl:4) are both active and they both move away from the center.

There seems to be a specific handshape for elements of the earth that in and of themselves do not have form or shape, such as the wind, fire, water and gaseous elements. The basic handshape for these is the Cl:5, which

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[8]Movement for freckles is from cheek area up towards the nose. For pimples, movement is from top of cheeks and moves downward.

changes form and orientation to represent motion of these elements.

When there is an absence of an object or when an object was present but is no longer in a given point in space, it is represented by the Cl:open 8 $\longrightarrow$ S or Cl:open 8.

Materials for Instruction

For tracing, we've developed some transparencies with illustrations of the various basic shapes and unusual shapes. There are also two sets of worksneets with different designs, which students can try to reproduce in ASL. For descriptive classifiers used to represent basic shapes, the tracing transparencies can be used. We have also produced a videotape showing a variety of objects ranging from simple to complex, found in everyday life. We also use styrofoam models representing the basic shapes, and have collected cut-out pipes and wooden boards for the same purpose. We have found a commercial product called "Uniset" helpful, as well.

There are transparencies illustrating designs and patterns. We have also made a set of various ribbons and fabrics which the teachers and students can manipulate on a poster board. We have also a stock of fabric scraps which we use.

UNIT TWO - COMBINATION, DELETION AND SUBSTITUTION

In the previous unit, we see that some SASSes require the use of two-handed markers and others just one-handed markers. Two-handed markers tend to be used to describe objects that are larger than one hand is able to hold in real life. Two-handed markers are also used to trace objects.

So, what happens when the signer needs to describe two or more objects (or two more features of an object), or when the signer wishes to show two or more objects in relation to each other? If the two features or two objects

are represented by two separate one-handed markers, then the signer will utilize these markers without any change. However, if at least one of them is represented by a two-handed marker, the signer need to delete one of the two-handed markers to accommodate the other noun on the other hand, or the signer needs to make a substitution (replacing the two-handed marker with a locative classifier sign). Examples:

deletion: (Putting a cup on a plate)

secondary object		central object
FOOD Cl:$\ddot{\underline{LL}}$	+	(signer deletes one hand and now uses Cl:$\ddot{\underline{L}}$ + Cl:C (cup) on other hand)

substitution: (putting a plate on the cup)

secondary object		central object
CUP Cl:C (located	+	FOOD Cl:$\ddot{\underline{LL}}$ (sub Cl:B for plate and places it on top of Cl:C)

Sometimes, it may be necessary to re-position the reference point after an object has been traced in order that it can be used to show how another object relates to it; e.g., (a flower is in a vase).

Tracing the shape of the vase -- both hands are equally active as the bottom round part of the vase is traced or outlined, but as the signer traces the neck of the vase, s/he uses the passive hand to "hold" the bottom part of the neck as s/he glides up the neck of the vase with the active hand (Cl:F). However, before the signer can locate the stem of the flower into the neck of the vase with his/her active hand, s/he needs to re-position the passive hand and places it at the top of the neck of the vase. This becomes the reference point and is more specific in relation to the stem of the flower than it would have been if s/he had not re-positioned the base hand.

When the signer desires to show the relationship of several objects or parts of objects, for instance, parts of a kitchen appliance, s/he needs to utilize the space in front of his/her body well and use topicalization to refer to previously established points in space. Here is an example: A signer wants to describe how a Cuisinart food processor works to a friend who has never seen one before. The signer may begin by describing the base and then the work bowl with the handle attachment. Then, the signer describes the cover with a feed tube attachment. But, the signer warns his/her friend that the Cuisinart won't begin processing food until the pusher assembly is placed into the feed tube and so on. Now, the signer wants to show how one presses the control switch. Here, s/he must use topicalization and refer back to the base that s/he mentioned earlier. During this discourse, the signer always uses the base hand as a reference point each time s/he shows relationship of a new part s/he is describing to the base hand.

Another example:

The semantic classifier Cl:3 representing vehicles is almost always substituted by the B handshape when combined with a classifier sign for a person riding on a bicycle. Before a signer can show where passengers are seated in a boat or in a car, the signer must substitute the B or flat B handshape for the vehicle classifier sign to represent the side of the vehicle, and then position the "passengers" in relation to this "side."

A third example:

Whenever a signer is talking about how much water or milk one should add to a bowl with flour or how much coffee is left in the pot, s/he must always use his/her base hand to represent the side or bottom of a container and use the active hand to indicate the level or amount of the liquid in the container.

More research is necessary before we can understand fully the cognitive processes that enable the signer to delete or substitute morphemes when two or more parts of an object are being described. Native signers do this process fluently without hesitation. Sign language students need to have extensive practice and drills in substituting morphemes and deleting one-handed markers from a two-handed marker before they can reach a level of acceptable sign production.

Materials for Instruction

A videotape has been developed to show a variety of possible combinations of objects. Students viewing the videotape need to produce the correct sign combinations utilizing deletion and substitution when necessary.

UNIT THREE - BASIC MOVEMENT ROOTS

As discussed earlier in this report, there are three basic movement roots -- stative, contact, and active. Each root has a displaced and an anchored form. We will discuss how we approach this information and apply it to classroom teaching.

Stative. Classifiers with stative movement root are usually described using the hand articulators for tracing. The movements produced are not actions of the object, but rather a representation of the size and shape of the object. This tracing movement is called the displaced form. Signs for objects represented by descriptive classifiers in anchored form are in neutral signing space. For example, a piece of candy can be described with the F handshape placed and held in front of the signer's body.

The basic sentence pattern for most objects in the stative form is noun + verb. First, the object needs to be identified, then it may be described.

Contact. When we say a cup is on the table, or a tree is located on our left, we usually use the active hand to represent the central object (cup or tree) and the base hand can be used to represent the surface of the table or the ground. However, the hand articulator representing the base is not usually used at all. The surface is implied when the signer makes a "contacting" movement within a point in space. At the end of the sign production for the active articulator, the sign is "held," indicating contact. It is then understood that the object is or has been located in that area.

It is important to distinguish between the locative sign and the instrument classifier sign, as this tends to be a common sign selection error with sign language students. For example, to depict a painting being placed on the wall, the instrument classifier sign is used because it indicates that the act is being performed by an agent. However, if the focus is on the painting being on the wall, we use the locative sign.

The contact root is also used to pluralize objects standing or sitting, 1) in a line, 2) in a row, 3) in a semi-circle, 4) scattered all over, 5) in a circle, 6) stacked one on top of another, and 7) in pairs. The motion involved is to contact the "surface" (implied by the contact motion) repeatedly with the active hand. Usually the base hand remains stationary and serves as a reference point for the pattern formed by the active hand.[9]

The stamping movement is used to show the location of dots or spots on a surface, e.g., the body of a person, a piece of fabric, or an orange.

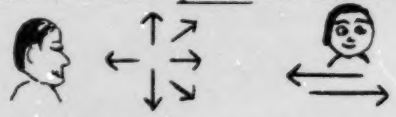
Active. Signs used for tracing purposes and some signs in the descriptive classifier category cannot be used in the active movement root, but all other signs in the inventory of classifiers can be used. Signs in the active root

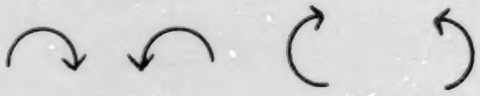
[9]For a more detailed discussion on pluralization, the reader is advised to refer to pp. 295-300 in the Cokely-Baker resource text for teachers.

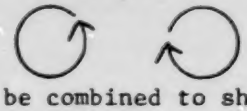
tend to be one-handed markers, probably because the other "free" hand is often used as a base hand or reference point.

With the active root, the abstract reference frame is often utilized, since the emphasis is on both motion and location of the objects.

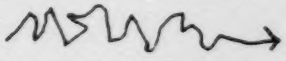
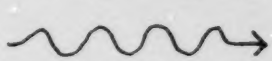
There are three basic movement paths in the active displaced form:

1) linear path 

2) arc path 

3) circular path. 

The above paths can be combined to show different types of paths; e.g., (a series of arc paths along a linear path).

Even though the signed path may represent real-life action, it may not actually be an exact representation of the real-life movement. For instance, although a drunkard may be walking erratically along the sidewalk (like so: ), in sign production, the signer would move his/her hand in this manner  . All movement paths must follow any one of the three basic paths or a combination of any two or three of the paths.

There are other types of movement in which the object remains in a fairly uniform place within the signing space, but the orientation of the object changes, such as a door swinging open. In this case, one end of the hand seems to remain constant, the other end moves probably 90 degrees to the left or right. Similarly, the classifier for a car on a rotating platform in a showroom does not move in a path, but its orientation changes as it rotates on its axis (the midpoint).

Some objects change in form, such as a light flashing on and off, or the aperture of a camera lens changing the size of its diameter.

Again, the changes in form and/or orientation can be combined with the three basic paths.

For objects that "roll over" or rotate at least two turns, the two-handed marker (C1:1) is used. Both hands alternate in a circular fashion. This is true for both animate and inanimate objects, regardless of the size and shape of the referent objects.

Materials for Instruction

The videotape developed for the basic shapes can also be used for the stative root (displaced and anchored). The videotape developed for the combination of two or more objects can be used as well for the contact root (displaced and anchored). For the active root, we have developed a videotape called "Movement." It shows a broad variety of possible paths, as well as changes in orientation and form of objects. Many things in daily life can be represented by the active movement root, so we have other videotapes which cover themes such as sports and recreation, vehicles in motion, animals, and other everyday situations. They may be used with advanced-beginning, or intermediate students. But, it is suggested that students be exposed to language principles regarding abstract reference frame, scale and the use of semantic classifiers before they can begin sign production in these more complex areas.

We have developed slides which show pluralization of objects and of people. Transparencies containing illustrations of plural objects have also been produced. We would suggest that the instructor gather some objects, such as fruit, pencils, cups and books, which are representative of the basic shapes, and use these to manipulate the movement of the objects in the classroom. We have found that toy cars may help with the understanding of movement, but their

classifier equivalents signed by students are often not accompanied by the appropriate eye gaze because the cars are very small in size. In the classroom, signer's eyes tend to follow the toy cars on the table, when in actuality, a signer telling of his/her experience with a car in real life, would follow the referent car on the ground in the distance.

UNIT FOUR - REAL WORLD REFERENCE FRAME

Generally, in any discourse, the real world reference frame is the primary reference frame. It can be used even when the referent objects are not present. The signer establishes objects within his/her signing space as he sees them. As the signer locates objects in specific areas within the signing space, s/he directs his/her eyes to those points. This principle is similar to the "Reality Principle" formulated by Dennis Cokely and Charlotte Baker in the resource text for instructors.[10] Although they were discussing its use with pronominalization, the same principle can be applied here. Ted Supalla emphasizes that in a real world reference frame, the ground is at the signer's feet.

There seems to be certain situations where the real world reference frame is utilized. They are as follows:

1. description of body parts
    a. human
    b. animals
2. description of clothing
3. signer's body can be used to represent
    a. front of vehicle
    b. tree
    c. mannequins
    d. puppets
    e. statues or busts
    f. profiles

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[10]Cokely, Dennis and Baker, Charlotte. American Sign Language: a Teacher's Resource Text on Grammar and Culture, Silver Spring, Maryland, T. J. Publishers, Inc. 1980, p. 223.

4. description of surroundings

   a. interiors of houses
   b. front exteriors of houses
   c. outdoors (in scale)

5. instrument and body classifiers used only in real world reference frames

Body Classifiers

Below are some language principles regarding the use of body classifiers:

Referent object	Selection of classifier signs		
Head	1. Cl:S (hand with wrist)	=	round head (human)
	2. Cl:G (hand with pinch)	=	head with narrow beak (bird)
	3. Cl:H (hand with pinch)	=	head with wide beak (duck)
	4. Cl:B (hand with pinch)	=	head with long, round, protruding face (horse, hound)
Eyes	1. Cl:F (two-handed)	=	emphasis on movements of eyes (not on direction of eye gaze)
	2. Cl:V (hand)	=	emphasis is on direction of eye gaze (seeing, looking, observing)
Arms	1. Cl:forearm	=	the signer's arms are used to represent arms (body classifiers)
Legs	1. Cl:1 (two-handed)	=	shows position(s) and/or actions of the legs
	2. Cl:forearm	=	the signer's arm is used to show the approximate location of an abrasion or wound on the leg, to show the length of a sock, to show the pattern on the sock, etc.
Feet	1. Cl:B (two-handed)	=	shows position(s) and/or action(s) of the feet and also used as base hand to show wounds, etc.

Instrument classifiers

Hands manipulating referent objects are represented by instrument classifiers. They usually show hand configurations as they manipulate the objects (press, push, spray, grasp), but they do not necessarily mimic the actual actions. (See Figure 2). A good activity to teach students to use instrument classifiers is to have the teacher (or someone else) perform various tasks with the hands and have students produce short sentences utilizing both SASSes and the instrument classifiers.

Materials for instruction

Pictures in magazines provide excellent resources for use as instructional materials in the classroom. The teacher can control the selection of topics (keeping in mind the emphasis on actions and/or descriptions in the real world reference frame). We have also developed a videotape showing the locations and actions of parts of the body, and a videotape showing the locations and actions of two people together. We also have slides of animals and videotapes of animals in action.

UNIT FIVE - ABSTRACT REFERENCE FRAME AND SEMANTIC CLASSIFIERS

The signer shifts to the abstract reference frame when it is more convenient to concentrate on the motion and/or location of one or more objects in relation to each other. Distance in the abstract reference frame is relative. The ground is "established" at the chest area in front of the signer's body. Within this frame, abstract semantic classifiers are used extensively, but not exclusively. Primitive classifiers as well as some SASSes can be used in the abstract reference frame, but not body and instrument classifiers.

It seems that during a signed discourse the length of time a person can utilize the abstract reference frame is quite limited, probably not more than

Figure 2

INSTRUMENT + ACTIVE DISPLACEMENT

F (pinch)

pick up something thin
take out something thin
place something thin on
peel something off
snip something off
put something in container
eat with fingers
(grapes, potato chips)
use tweezers

B (push or lift)

lift large rock/ball
push door
push car
push something down

bO (write)

write
mark dots on paper
use toothpick
apply make-up
put on lipstick

S (grasp handle)

comb hair
use stick shift
drive/turn wheel (car)
use jack
open car door
use telephone
use iron
open/close drawer with handle
pour pitcher
use hammer
row boat
pull rope

flat O (turn something over)

turn over sunscreen in car
turn over pages
put things away
sorting letters (post office)
make-up (powder)
turn playing cards over

K (scissors)

cut paper
cut materials
cut grass
cut hair

bent L (spray)

use hairspray
use bug spray
use hair blower
use water spray
apply perfume spray
use air spray

X + thumb (hold something)

flick light switch on/off
light match
brush teeth
paint wall
use flashlight
hold kite
hold key
turn key

A (press)

push button
push lighter in car
ring doorbell
press something inside
applying postage stamp

CS

cut grass
hand exercise

spread C (screw on)

screw lid on jar
use peppermill
screw outdoor water faucet
turn knob
adjust thermostat
operate computer hardware
(machinery, valves)

five seconds at any one time, though the signer can shift between the real world reference frame and the abstract reference frame as often as s/he wishes. The real world reference frame governs the story line, therefore, it is the primary frame. Abstract reference frames have a restricted purpose and that is to indicate to the addressee the direction, path, or movement of an object or the location of an object in relation to another.

Another observation we made is that whenever something happens to change the state of semantic classifiers within the abstract reference frame, the signer must resort back to the real world reference frame to show such a change. For example, a car crashing into a tree cannot be represented by a change in the semantic classifier for a vehicle. Instead, signer must shift to real world reference frame and then use SASSes around the signer's body to show a change in state of the body of the car. This is because semantic classifiers are not multi-morphemic. They cannot be changed structurally.

Semantic classifiers are a group of classifier signs that represent a certain category of objects. They do not represent the size and shape of the referent objects at all. All surface vehicles, for example, can be represented by the 3 handshape, regardless of whether the vehicle is a huge truck or a tricycle.

Below is a list of semantic classifiers:

CLASSIFIERS		CATEGORY OF OBJECTS
Cl:A	=	upright stationary objects (houses, vases, etc.), objects that are rarely moved
Cl:ILY	=	airplane
Cl:1	=	upright animate objects
Cl:V	=	legs of humans and animals

CLASSIFIERS		CATEGORY OF OBJECTS
Cl:V	=	bent legs of humans and animals; birds, legs of chairs
Cl:3	=	vehicles
Cl:B (palm down)	=	wide, flat vehicles
Cl:B	=	base hand for vehicle or animal that is being straddled or ridden
Cl:1 + forearm	=	long or tall objects (inanimate)
Cl:5 + forearm	=	tree

Semantic classifiers have the same function as locative SASSes. They represent objects in motion, or the location of objects. Semantic classifiers are single morphemes. SASSes are multi-morphemic, and the handshapes can be altered or modified.

Materials for Instruction

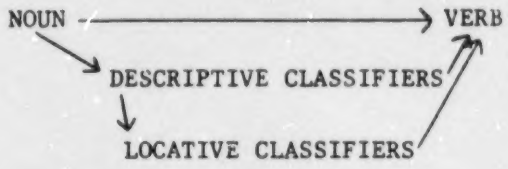
Controlled activities can be used to teach the students the concept of abstract reference frame. One would be for students to practice the movement paths of objects (videotape on "movement") or the contact of objects on surfaces. Drills may be good for developing speed and fluency, but we feel that since abstract reference frame cannot be used exclusively within a signed discourse, it would be more real to teach the students to utilize both the real world reference frame and the abstract reference frame within a signed discourse. (See next unit on shift between the two reference frames).

UNIT SIX - SHIFT BETWEEN REFERENCE FRAMES AND RELATIVE SCALE

As we have discussed above, body and instrument classifiers can be used only in the real world reference frame, and semantic classifiers are used mostly, but not limited to, the abstract reference frame. The signer may find it necessary to shift between the two frames during a signed discourse.

For intermediate students, they can begin to utilize this shifting process when describing simple actions such as playing ball (throwing and running), driving a car over a bumpy road, two people window-shopping, etc.

Students in the beginning-intermediate classes can begin with this structure when describing people or animals in action:



The student should identify an object (NOUN) and then make a statement about the object in action. Then, the student can produce another sentence such as the one above, but before s/he makes a statement about the action of the object, s/he describes the object and then locates it in the signing space. By producing this sentence, the student has shifted from the real world reference frame to the abstract reference frame and then probably back to the real world reference frame. For example:

noun		descriptive		locative		verb
BIRD	+	Cl:G (small beak)	+	Cl:V (standing)	+	base hand Cl:1 active hand Cl:1 ⟶ 1 (bird is now standing on one leg)

For more advanced students, they can begin with a longer description of activities or instructions. Below are two examples of what we seek in students' selection of classifier signs.

1) driving a car

   a. use INSTRUMENT to show driver behind the wheel (agent)
   b. use SEMANTIC to show location and motion of car
   c. use SASSes to describe shape of car (and appearance)

d. use BODY to show space inside the car (if necessary)

e. use PRIMITIVE to show directions or to locate objects as seen by the driver (if necessary)

2) playing baseball

a. use INSTRUMENT to show person throwing the ball and gripping the bat

b. use SEMANTIC to show base runners and ballplayers in action (sliding into second base, leaping to catch a line drive)

c. use SASSes to describe uniforms, bases, mound, scoreboard

d. use BODY to show motion of pitcher or batter or umpire making a call

e. use PRIMITIVE to show path of ball as it leaves the pitcher's hand and as soon as it is hit

Students should be encouraged to shift between the two reference frames as much as possible. They should remember that the real world reference framd is the primary frame and that they can shift to the abstract reference frame to show the location and/or motion of objects.

In a real world reference frame, the signer's body is used as a morpheme and in turn, this determines the selection of other classifier signs as they relate to the signer's body. Signs made on the signer's body must relate to the body in scale. The semantic classifier for a person or an animal (Cl:V) when placed on any part of the signer's body can only mean a very small animate object. But, if this same classifier sign is used within the signing space and not on the signer's body, its size is not determined until other objects are established that indicate their approximate size.

In an abstract reference frame, the signer's body is never utilized as a morpheme. Therefore, the size of the referent objects is not indicated, but they must relate to each other in scale. For instance, both the trunk of a tree and a branch may be represented by the Cl:1 (round object). When the Cl:1 is combined with the vehicle Cl:3 only the branch would relate with the

vehicle classifier. For the trunk to relate to the vehicle classifier in scale, the Cl:C would be an appropriate classifier sign.

Scale is one of the areas which needs to be studied further. We have some general ideas about how scale is used, but we have not been able to come up with language principles that can be applied in most instances. Likewise, the shifting process between the two reference frames needs further study.

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APPENDIX A

INVENTORY OF CLASSIFIERS

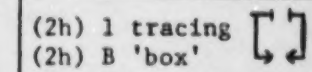
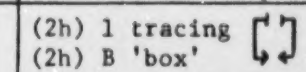
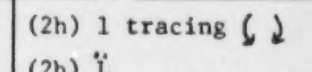
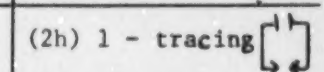
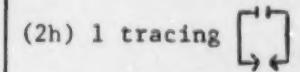
straight Z LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
PENCIL			bO (write) F (pick up) S (hold)	(2h) F tracing ↔ (2h) G tracing ↔ 1 - CL
TOOTHPICK			bO (clean teeth) F (pick up)	(2h) F tracing ↔ (2h) closed G tracing ↔ 1 - CL
NAIL			G (hold)	(2h) closed G tracing ↔ (2h) F tracing ↔ 1 - CL
DART			G (hold or throw) S (hold)	(2h) G tracing ↔ 1 - CL
TAPERED CANDLE			S (place on base) F (pick up)	(2h) F tracing ↕ 1 - CL
BANANA			S (hold)	(2h) F tracing ↔ 1 - CL
BROOM			(2h) S (wrist movem't) (2h) B (passive + sweep)	(2h) F tracing ↕ 1 - CL
STEM OF PLANT			F (pinch off) S (repot)	(2h) closed G tracing ↕ (2h) F tracing ↕ 1 - CL
CLOTHES HANGER			S (hold)	(2h) F outline X - CL

straight Z (cont'd) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
T.V. ANTENNA			(2h) A } adjusting (2h) A }	(2h) F tracing ↑↑ (2h) 1 - CL
LEG				(2h) F ↕ (2h) C ↓↓ 1

straight H LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
RULER			F (pick) A (hold) B (press on)	(2h) G ↔'rectangular' H - CL
RIBBON			(2h) F "tracing"	(2h) G tracing ⟷ (2h) H ⟼ H - CL
BAND-AID			F (peel off) Ȧ (press)	(2h) G ↔'rectangular H - CL ⟼
POSTAGE STAMP			Ȧ (press) F (peel off)	(2h) G ↔'rectangular' (2h) 1 ↱↵ 'box' H - CL
DIVING BOARD			B	(2h) G tracing ⟷ (2h) L̈ tracing ⟷ H - CL or (2h) B - CL
SCREWDRIVER			A (twist)	(2h) F tracing + G tracing ⟼ H - CL
SPOON			A (hold) F (pick up)	open F + G tracing ⟼ H - CL
SMALL PAINTBRUSH			A (paint) S (hold)	(2h) G tracing ⟷ H - CL
FORK			A (hold)	4-CL + G tracing ⟼ H - CL

straight H (cont'd) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
TONGUE (animal or human)		H - CL with tongue		L̈ tracing ⟼ H - CL
TIE			(2h) A	(2h) G ⟼ (2h) G ⟷ (2h) H ⟼ H - CL

straight H LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
VENETIAN BLIND(S)			F (turn) flat O (turn)	(2h) G tracing ⟷ H
SCISSORS				H - 'open & close'
LADDER			(2h)S (alternate)	(2h) C H - CL
NAME TAG			F flat O	(2h) G ⟷'rectangular H

straight B LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
8½" x 11" PAPER			F (place flat O (take) bO (write on)	(2h) 1 tracing  (2h) B 'box' B - CL F for degree of thickness
BOOK			(2h) flat C (open) flat C (hold) (2h) B (close book)	(2h) B 'box' (2h) G (for thickness) B-CL
FOOT		B (use hand only)		Use B base hand to represent foot + B or Z other hand to trace around, over, or under base hand
MIRROR			(2h) A (hang or hold)	(2h) 1 tracing  (2h) B 'box' (2h) L B - CL
SLICE OF BREAD			flat O (take) F (pick) L (hold while eating)	(2h) 1 tracing  (2h) L (2h) G (thickness) B; L
FISH		(2h) B on body for gills (2h) 5 on eyes	(2h) A (hold, grab) flat O (turn over)	(2h) B tracing (2h) B (for length) B - CL; B - CL wg
RAFT			(2h) S (using oars)	(2h) 1 - tracing  B - CL
WALL				(2h) B ⟷ or ↕ B
FLOOR				(2h) B ⟷ or (2h) 1 tracing 
SOFA			(2h) B (push or lift)	(2h) B 'outline' B - CL

round 2 (one-handed) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
PIECE OF HARD CANDY			F	F
LOOP EARRING			F	F (2h) F tracing ʃ ɔ
PEA			F	F
HEARING AID BATTERY			F A (press)	F G (thickness)
MOLE				F
PENNY			F	F
BUTTON			F	F
DOT				F
POLE			F G (put on)	F (2h) G (thickness)

round 2 (cont'd) (one-handed) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
HALF-DOLLAR			F	F
BRUISE		S on body part B on body part		L 1 - tracing

round Z
(one-handed)
LEXICAL ITEMS

INVENTORY OF CLASSIFIERS

	ABSTRACT	BODY	INSTRUMENTAL	SASS
MOON				F L (2h) 5 'spherical'
MEDAL			flat O F	L ½ C B - CL
ASHTRAY			B	L (2h) L B - CL
BRACES FOR TEETH				L (2h) F tracing ⟷ 1 - CL (?)
CAMERA LENS FILTER				L open F 5
EYE GLASSES			F flat O	(2h) F } optional + (2h) L } (2h) F tracing

round Z (two-handed) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
COOKIE				L open F 5 (2h) L
DISH			flat O	(2h) L (2h) L + 1 tracing ↻ B - CL
FACE MASK			F	(2h) L 5 (2h) L + 1 tracing ↻ (2h) B ⟷
CLOCK				(2h) L (2h) C C - CL L - CL; B - CL; ½ C - CL
HOLE IN WALL				(2h) L (2h) C (2h) B ⟶ (2h) 5
ROUND MIRROR				(2h) L B - CL
PIZZA			flat O	(2h) L B
LAKE				(2h) L (2h) L + 1 tracing ↻
CROWN				(2h) B (2h) L (2h) B ↑↑

round H LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
STAPLE REMOVER			A (press)	½ C (open & close) (2h) ‡
FLYING SAUCER				½ C ‡ B - CL
SMALL CAMERA LENS (25 mm)				½ C ‡
(TEETH) JAWS OF SMALL ANIMALS		+ bite teeth		½ C (open & close) (2h) ‡
SNAKE FANGS		+ bite teeth or th		‡

round B (one-handed) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
NARROW VASE				(2h) C ↕ B + C ↕ C - CL; Ȧ - CL
COFFEE MUG			A	C B + C ↕
SALT SHAKER			S	C Ȧ - CL
SMALL FLOWER POT				C (2h) C B + C
TOILET PAPER CORE				(2h) C ⟷ C
ZOOM CAMERA LENS				(2h) C ⟼
(TEETH) JAWS OF LARGE ANIMALS		+ bite teeth		C (open & close) (2h) 5̈
CHIMNEY				B + C ↕ (2h) B 'box'
ELEPHANT TRUNK				C tracing (from nose) ↪

round B (one-handed spherical) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
SCOOP OF ICE CREAM			A	5 B ↷
STICK SHIFT KNOB			S A	5
APPLE			A (peel)	C (2h) C 1 fist(s)
DOOR KNOB			spread C	5
CLOWN'S NOSE				5 fat E
FISH EYE				(2h) 5
DIAMOND ON RING			F	5 fat E
ROCK				C (2h) C fist(s) 1
BALL				C (2h) C fist(s) 1
SHINER (EYES)		S (hit on eye)		5 L 1 tracing
BUN ON HAIR				5

round B (one-handed spherical & two-handed)

LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
LAMP GLOBE ON CEILING				5 (2h) B ↖ ↗
SURGICAL MASK				(2h) L ⟷ (on face) B
BEARD				C ↓ (2h) B ↘ ↙
LARGE ROCK				(2h) 5 5 ↓
GLOBE			B (lift)	(2h) 5 (2h) B ↻ ↺
EARTH				(2h) 5 (2h) B ↻ ↺ F
HEAD		S (head moves with S)		(2h) 5 S
WHOLE WATERMELON			B (lift) A (slice)	(2h) 5 1, fist(s)
EGG				(2h) C C, 1

round B (one-handed) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
LAMP SHADE				(2h) B ↙ ↘ (2h) B ↷ ↶ C over 1
TREE TRUNK				(2h) B ↑ ↑ (2h) C ↕ 1 arm + 5
TOILET BOWL				(2h) B ↖ ↗ (2h) C • A
FIRE HYDRANT				(2h) B ↑ ↑ C
LOG				(2h) C ⟷ 1 - CL
HAT BOX				(2h) C ↑ ↑ C • A
LARGE FLOWER POT				(2h) C ↑ ↑ C • A
MANHOLE COVER			•• B	(2h) •• L (2h) C B
TUNNEL				(2h) C G (in the distance) C (2h) B

straight & round + stative displacement LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
FRAMES			flat O	(2h) G tracing (2h) B 'box' B
POSTCARD			bO (write) F (pick)	(2h) L 'rectangular' (2h) L B - CL
GATEWAY ARCH IN ST. LOUIS				(2h) G tracing (2h) G tracing
BACON/LASAGNE			F	(2h) G 'rectangular' (2h) H ⟷ H
HEARING AID CORD		from ear	F	I (from ear) (2h) F ⟷ 1
SPAGHETTI			F	(2h) I ⟷
WIRE			F	(2h) F ⟷ (2h) I ⟷ 1
STRING			F	(2h) I ⟷ (2h) F ⟷

straight & round + stative displacement "LEXICAL ITEMS

INVENTORY OF CLASSIFIERS

	ABSTRACT	BODY	INSTRUMENTAL	SASS
PIPE				(2h) C ⟷ C ⟶ (on imaginary surface) 1
BASEBALL BAT			(2h) S S	(2h) C ⟷ 1
SHELF				(2h) B ⟷ B ⟶ B
LAND SURFACE				(2h) B ⟷ B ⟶ B
REFRIGERATOR			S	(2h) B ↓ ↓ A, B
TABLE				(2h) B ↓ ↓ B
T.V.				(2h) B ↓ ↓ (2h) B 'box' (2h) B A
SINK				(2h) B ↖ ↗

primitive point marker LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
VALENTINE			bO (write on) F flat O	(2h) 1 'outline' B
SCAR ON HEAD				1 - tracing on body
DIMPLE				1 - twist on body
PIMPLE				1 - contact on body
FRECKLES				5 (2h) 2 (alternate on body)
GRANNY EYEGLASSES				(2h) I
TATTOO			bO	G 'outline' on body
SPARKS				1 (in motion)

semantic LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
PERSON	1			
PERSON	H (or V)			
MAMMAL	(2h) H or H (or V)			
INSECT/BIRD	H (or V)			
VEHICLE	3			
AIRPLANE	1 + Y			
LIGHT	0 —— 5			
TREE	forearm + 5			
)E OBJECTS	A			
SMALL BUILDINGS	A			

unusual LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
DREAM				(2h) S ⟶ 5 5
ANT FEELERS				(2h) F tracing ↖ ↗ (from head) (2h) 1
LIPSTICK MARKS ON FACE			flat O bO	G tracing (2h) G tracing ⟷ G
PINOCCHIO'S LONG NOSE				F tracing ⟼ (from head) G tracing ⟼ " " 1 tracing ⟼ " " 1
SWORD FISH				F tracing ⟼ (from head) G tracing ⟼ " " 1 tracing ⟼ " " 1
UNICORN				F tracing ⟼ (from head) C ⟶ S tracing ⟼ (from head) 1 tracing ⟼ " " 1
BANDAGE AROUND WRIST				(2h) G tracing ⟷ (2h) B (active B circle passive B)
MUSTACHE				(2h) G tracing ⟷ (2h) flat B tracing ⟷ (for thick)
MIND				5 (end pivot movement) (2h) 5 (end pivot movement)

unusual (cont'd) LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
ROCKET				(2h) C ↑ ↑ R - CL 1 - CL
FLAMES				(2h) 5 (wiggle)
FAT PERSON				Y (2h) B ← →
TYING A KNOT			bO ⟷ bO	
OVEN			S	(2h) B 5 + (2h) B
TELEPHONE CORD				(2h) F ⟷ (2h) 1 base + ⟷ (2h) I ⟷

plurals LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
FENCE				(2h) spread B ⟷ spread B
CAT WHISKERS			F	(2h) F ↖ ↗ ← → ↙ ↘ (from head) spread B
EYE LASHES			F	(2h) spread B ↑ ↑ spread B
WATERFALLS				(2h) spread B (wiggle) ↙ ↙
RUNNING WATER				spread B ↓ (shake)
CLOUDS				(2h) 5 5
LACES				(2h) spread B (wiggle)
TEETH/JAWS OF ALIGATOR				(2h) spread B
MASS OF PEOPLE/ ANIMALS				(2h) 5
SPIDER				(2h) 5 H
HELICOPTER BLADES				5 or 1

plurals

LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
GRASS				(2h) spread B (wiggle)
TYPEWRITTEN LINES ON PAPER				CL: 4 - move to right
SECTIONS, i.e., quarters in a football game or years in college				CL: 4
PAGES IN A BOOK				CL: 5 + CL edge of B
T.V. PROGRAM OR MOVIE (from beginning to end)				CL: 5 + CL edge of B

compounds LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
FLASHLIGHT			spread C	$\ddot{L}$ + O ⟶ 5 (2h) C + O ⟶ 5
TELEPHONE			(2h) S	(2h) B 'box' + Y
FILE DRAWER				5 + 5 (wiggle)
GRANDPA CLOCK				(2h) B ↑↑ + (2h) $\ddot{L}$
EXHAUST FUMES				O + O ⟶ 5 (repeat)
LIGHT BULB			spread C	O + spread C (shake) (2h) B 'outline'

SASS + FUNCTION LEXICAL ITEMS	INVENTORY OF CLASSIFIERS			
	ABSTRACT	BODY	INSTRUMENTAL	SASS
TYPEWRITER			'type' (2h) spread C	(2h) B 'box' + type + (2h) F + (2h) F ⟷ + (2h) spread B - CL
MICROWAVE			S	(2h) B 'box' + 5 (open) + (2h) O ⟶ 5
CACTUS				(2h) C ↑↑ + (2h) C (alternate)
TOOL BOX				(2h) B 'box' + (2h) B (open) + (2h) B ⟷ (repeat)
BASEBALL GLOVE				(2h) B (B over B) + G
CLARINET				base C at mouth + C ↷ + (2h) 5 wiggle

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